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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,873	06/29/2001	Jun Yamada	15162/03780	1027
24367	7590	10/14/2003	EXAMINER	
SIDLEY AUSTIN BROWN & WOOD LLP 717 NORTH HARWOOD SUITE 3400 DALLAS, TX 75201			KIELIN, ERIK J	
		ART UNIT	PAPER NUMBER	2813

DATE MAILED: 10/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicant No.	Applicant(s)
	09/896,873	YAMADA ET AL. <i>W</i>
	Examiner	Art Unit
	Erik Kielin	2813

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 22 July 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-130 is/are pending in the application.
- 4a) Of the above claim(s) 1-17, 29-37, 39, 41, 43, 45, 47, 49, 51, 53 and 55-130 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 18-28, 38, 40, 42, 44, 46, 48, 50, 52 and 54 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 June 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6,7,8</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the species of Group IV, with claims 18-28, 38, 40, 42, 44, 46, 48, 50, 52, and 54, indicated by Applicant to read on the elected species, in Paper No. 13 is acknowledged.
2. Applicant's election with traverse is acknowledged. The traversal is on the ground(s) that Examiner did not indicate that the method of making the LCD and LCD are different inventions. The LCD could be made by a materially different method since methods other than rubbing could be used to set the orientation film to align the liquid crystals differently in the pixel regions, as presently claimed, such as by using a polymer additive to the liquid crystal to align the liquid crystals.

The requirement is still deemed proper and is therefore made FINAL.

Accordingly, claims 18-28, 38, 40, 42, 44, 46, 48, 50, 52, and 54 are active.

3. Claims 1-17, 29-37, 39, 41, 43, 45, 47, 49, 51, 53, 55-130 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
6. The abstract of the disclosure is objected to because it is longer than 150 words and it must be a single paragraph. Correction is required. See MPEP § 608.01(b).
7. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The novelty of the alignment of the liquid crystal layer should be included.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
9. Claims 18-28, 38, 40, 42, 44, 46, 48, 52, and 54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of the above-indicated claims, it is unclear (1) which substrate is being referred to; (2) which liquid crystals are associated with which substrate; (3) which helical axes are associated with which liquid crystals; and (4) which of the substrates of the multi-substrate LCD is being referred to, in general. There exist numerous misplaced modifiers. Furthermore, the difference between "an observation side" and "an element observation side" is unclear. It is unclear if a single substrate is in the "selective reflection state" or a pair of substrates, or the

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entire multi-layered structure because the phrase “in the selective reflection state” is used plural times. Similarly, it is unclear what is the purpose of the redundancy of various phrases is within the same claim; their similarity makes the claims exceedingly confusing as to what feature is being referred to.

In short, these claims are virtually incomprehensible as to the relationship between the helical axes of the liquid crystals of one substrate relative to those of the other substrates. For the purposes of patentability, the claims will be interpreted as best understood by Examiner, more specifically as explained with respect to the elected species of Figs. 11(A) and 11(B).

Non-limiting examples are included here:

Claim 18 recites the limitation "the opposite substrates" in lines 7-8. There is insufficient antecedent basis for this limitation in the claim. Also, since only “a pair of substrates” has been recited, it is unclear what or how many opposite substrates there are.

In line 8 of claim 18, it is unclear as to what the term “respectively” refers.

In line 9 of claim 18, it is unclear as to what “said substrates” refers, since there are the “pair of substrates” and “the opposite substrates.”

In line 9 of claim 18, it is unclear what the term “neighboring” means. This confusion is exacerbated because of the improper antecedent basis for “said substrates.”

Claim 19 recites the limitation "the opposite substrates" in lines 4-5 and 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "the other substrate" in the last line. There is insufficient antecedent basis for this limitation in the claim.

In claim 19, the recitation “a ratio between the liquid crystal domains taking the polydomain state and the liquid crystal domains taking the monodomain state is different between the liquid crystal domain in each of the pixel regions near one of the opposite substrates and the liquid crystal domain in each of the pixel regions near the other substrate” is unclear. There appear to be four different liquid crystal domains and it is unclear, as presently written, how they are related, if at all.

Claim 20 recites the limitation "the substrate on an element observation side" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim. Is this substrate one of the "pair of substrates," "the opposite substrates," "the other substrate," or some newly introduced substrate?

Claim 20 recites the limitation "the other side" in the last line. There is insufficient antecedent basis for this limitation in the claim. The "other side" of what? ...the substrate, the other substrate, the opposite substrates, the liquid crystal, the pixel region, the orientation layer?

Claim 21 recites the limitation "the opposite substrates" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim.

Claim 21 recites the limitation "the other substrate" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 22 recites the limitation "the substrate on an element observation side" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim.

Claim 23 recites the limitation “the substrate opposed to the liquid crystal domains in said mixed state” in lines 4-5. There is insufficient antecedent basis for this limitation in the claim. Is

this substrate one of the “pair of substrates,” “the opposite substrates,” “the other substrate,” “the substrate an element observation side” or some newly introduced substrate?

Claim 23 recites the limitation "said substrate opposed to said liquid crystal domains" in lines 5-6. There is insufficient antecedent basis for this limitation in the claim. Is this yet another substrate? Moreover, there are liquid crystal domains near the “pair of substrates,” so it is further unclear as to how there is a substrate opposed to the liquid crystal domains.

Further regarding claim 23, it is unclear how a substrate can be opposed to a liquid crystal domain. Domains are constructively defined in the specification as the angle of the helical axis of the liquid crystal to a direction normal to the substrate surface.

Claim 24 recites the limitation “the substrate opposed to the liquid crystal domains in said mixed state” in lines 5-6. There is insufficient antecedent basis for this limitation in the claim. Claim 38 recites the limitation "the opposite substrates" in lines 5-6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claim 18 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5,437,811 (**Doane et al.**).

Doane discloses a liquid crystal light modulation element comprising a liquid crystal layer held between a pair of substrates **10, 11** (Fig. 1) and including a liquid crystal material (Fig. 5) exhibiting a cholesteric phase and having a peak of a selective reflection wavelength in a visible wavelength range, wherein said liquid crystal layer in a selective reflection state has pixel regions (Fig. 1) neighboring to the opposite substrates, respectively, and liquid crystal domains in the pixel regions neighboring to at least one of said substrates are in a mixed state of a polydomain state and a monodomain state (Fig. 5; col. 12, line 45 to col. 13, line 13).

12. Claim 18, 23, 24, 26-28 is rejected under 35 U.S.C. 102(e) as being anticipated by US 6,320,639 B1 (**Mori** et al.) considered with the article **Lu** et al. “13.3 Surface modified Reflective Cholesteric Displays” for a showing of inherency.

Mori discloses a liquid crystal light modulation element comprising a liquid crystal layer held between a pair of substrates **53a, 53b** (Fig. 15) and including a liquid crystal material **57** which may be chiral nematic and therefore exhibiting a cholesteric phase (col. 10, lines 35-36) and having a peak of a selective reflection wavelength in a visible wavelength range, wherein said liquid crystal layer **57** in a selective reflection state has pixel regions neighboring to the opposite substrates, respectively, and liquid crystal domains in the pixel regions neighboring to at least one of said substrates are in a mixed state of a polydomain state (at the region indicated to be “F” and a monodomain state (at the pixel region indicated to be “G”). (See also col. 18, lines 4-16 and col. 18, line 63 to col. 19, line 42.)

It is seen to be inherent that at the region labeled “F” that the liquid crystals are in a polydomain state, because the surface of the alignment layer **55a** at “F” is rough (col. 19, lines

40-42). Lu teaches that a rough alignment layer gives a cholesteric liquid crystal with a polydomain state.

Regarding claim 23, **Mori** discloses a liquid crystal light modulation element according to claim 18, wherein an orientation control layer is arranged at least on the substrate opposed to the liquid crystal domains in said mixed state, and particularly on the side of said substrate opposed to said liquid crystal domains, and is in contact with the liquid crystal, and the liquid crystal molecules in said mixed state and the selective reflection state is subjected to the orientation control by the orientation control layer.

Regarding claim 24, **Mori** discloses a liquid crystal light modulation element according to claim 23, wherein said orientation control is performed by the rubbing processing effected on the orientation control layer arranged on the substrate opposed to the liquid crystal domains in said mixed state (col. 18, lines 4-16; col. 19, lines 24-27).

Regarding claim 26, **Mori** discloses a liquid crystal light modulation element according to claim 23, wherein said orientation control is performed by emitting light under predetermined condition(s) to the orientation control layer arranged on the substrate opposed to the liquid crystal domains in said mixed state (col. 18, lines 4-16).

Regarding claim 27, **Mori** discloses a liquid crystal light modulation element according to claim 26, wherein said predetermined condition(s) include any one of an amount of the emitted light, a substrate temperature, an incident angle of the incident light on the substrate surface (col. 18, lines 4-16).

Regarding claim 28, **Mori** discloses a liquid crystal light modulation element according to claim 26, wherein said light is ultraviolet light (col. 18, lines 4-16).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Erik Kielin
Primary Examiner
October 7, 2003